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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Moungi G. Bawendi et al. Art Unit : 1641
Serial No. : 09/160,454 Examiner : M. Pham
Filed : September 24, 1998
Title : BIOLOGICAL APPLICATIONS OF QUANTUM DOTS

Commissioner for Patents
Washington, D.C. 20231

DECLARATION OF MOUNGI G. BAWENDI UNDER 37 C.F.R. § 1.131

I, Moungi G. Bawendi, hereby declare that:

1. I am a professor of chemistry and the W.M. Keck professor of energy at the Massachusetts Institute of Technology, Cambridge, Massachusetts, U.S.A.

2. I believe that I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the above-captioned application, the specification of which was filed on September 24, 1998, as Application Serial No. 09/160,454, and claims benefit from Provisional Application Serial No. 60/100,947, filed on September 18, 1998.

3. I have reviewed the Office Action dated February 3, 2000 issued in this application. In this Office Action, claims 1-27, 29, 31-32, 34-36, 39, and 41-45 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,990,479 by Weiss et al. ("the Weiss patent"). Additionally, claims 28, 33, and 40 are rejected under 35 U.S.C.§ 103(a) as being unpatentable over the Weiss patent in view of other prior art.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

June 5, 2000
Date of Deposit

Megan O'Meara
Signature

Megan O'Meara
Typed or Printed Name of Person Signing Certificate

4. The Weiss patent was issued as a patent on November 23, 1999, from an application filed on November 25, 1997.

5. Prior to November 25, 1997, I prepared a letter at Massachusetts Institute of Technology describing the use of semiconductor nanocrystallites as fluorescent tags in biological systems. A copy of the letter is attached hereto as "Exhibit A."

6. The letter was signed and dated by myself and witnessed by Dr. Jin-Kyu Lee, a post-doctoral scientist in my research group at that time. Dr. Lee is now an assistant professor in the department of chemistry at Seoul National University.

7. In the letter I summarized how to use nanocrystallites, such as CdSe, overcoated with a higher bandgap semiconductor material as fluorescent tags, i.e., biological probes. Specifically, I described how water-soluble overcoated crystallites could be produced by attaching a derivatized ligand including an alkyl group and a charged group, such as a carboxylic acid, to the crystallite. I further described that the charged group could be used to bind a biological moiety thereby producing a tagged biological system.

8. Based on the ideas presented in the letter, I pursued and obtained funding from private agencies to support reducing to practice the concept of using semiconductor nanocrystallite as fluorescent tags. The diligence efforts included studying semiconductor nanocrystallite fluorescent tags; the studies were conducted in my research laboratory at the Massachusetts Institute of Technology. Additionally, I and the other co-inventors worked with attorneys at the Boston office of the law firm Choate, Hall, and Stewart, P.C. to prepare the above-captioned application. Attached hereto as "Exhibit B" is a letter sent prior to November 25, 1997 from an attorney at Choate, Hall, and Stewart, P.C. to the Massachusetts Institute of Technology Licensing Office, which detailed our plans to file this application.

9. I and the other co-inventors named in this application worked with the attorneys at Choate, Hall, and Stewart, P.C. to prepare the application. Specifically, the preparation work

involved review of forty prior art references (all of which are listed on PTO 1449 form which was submitted with the Information Disclosure Statement mailed on September 24, 1998), and discussion of claim scope and other details of the draft application. A provisional application was filed on September 18, 1998.

10. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Date: June 1, '00

Moungi G. Bawendi
Professor of Chemistry
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